U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-259 162

Lake Secession, Abbeville and Anderson Counties South Carolina

Corvallis Environmental Research Lab, Oreg

Prepared for

Environmental Monitoring and Support Lab, Las Vegas, Nev

May 76

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Report on Lake Secession, Abbeville & Anderson Counties, South Carolina		5. REPORT DATE Prepared May 1976 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Anonymous (National Eutrophication Survey Staff)		8. PERFORMING ORGANIZATION REPORT NO. Working Paper # 439
9. PERFORMING ORGANIZATION NAME AND ADDRESS National Eutrophication Survey U.S. Environmental Protection Agency 200 S. W. 35th St. Corvallis, Oregon 97330		10. PROGRAM ELEMENT NO. 11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS Office of Research and Development U.S. Environmental Protection Agency 401 M Street, S. W. Washington, DC 20460		13. TYPE OF REPORT AND PERIOD COVERED Final - 1973 14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES
Prepared in cooperation with the U.S. Environmental Protection Agency, National Environmental Research Center, Las Vegas, Nevada 89114

16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
eutrophication lakes nutrients phosphorus nitrogen loading	PRICES SUBJECT TO CHANGE	05B 05C

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report)	21. NO. OF PAGES
Release unlimited		44
	20. SECURITY CLASS (This page)	22. PRICE

EPA Form 2220-1 (9-73)

309156

PB 259 162

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

WORKING PAPER SERIES

CORVALLIS ENVIRONMENTAL RESEARCH LABORATORY - CORVALLIS, OREGON

and

ENVIRONMENTAL MONITORING & SUPPORT LABORATORY - LAS VEGAS, NEVADA

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

P.O. 699-440

REPORT
ON
LAKE SECESSION
ABBEVILLE AND ANDERSON COUNTIES
SOUTH CAROLINA
EPA REGION IV
WORKING PAPER No. 439

WITH THE COOPERATION OF THE
SOUTH CAROLINA DEPARTMENT OF HEALTH AND
ENVIRONMENTAL CONTROL
AND THE
SOUTH CAROLINA NATIONAL GUARD

MAY, 1976

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the South Carolina Department of Health and Environmental Control for professional involvement, to the South Carolina National Guard for conducting the tributary sampling phase of the Survey, and to those South Carolina wastewater treatment plant operators who voluntarily provided effluent samples and flow data.

The staff of the South Carolina Bureau of Wastewater and Stream Quality Control provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

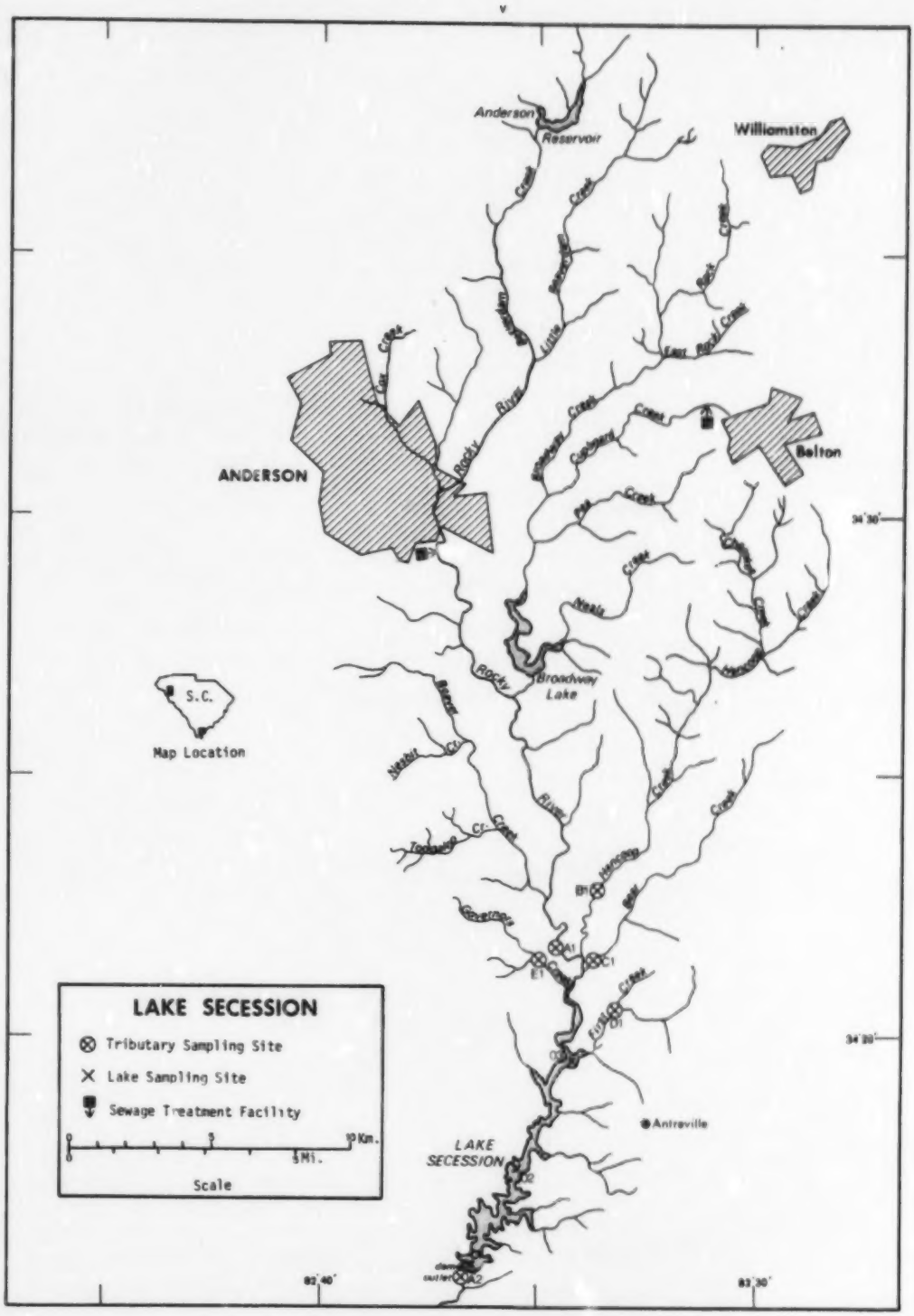
Major General Robert L. McCrady, the Adjutant General of South Carolina, and Project Officer Lt. Colonel John P. DuPre (Retired), who directed the volunteer efforts of the South Carolina National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF SOUTH CAROLINA

NAME	COUNTY
Clark Hill	Abbeville, McCormick, SC; Columbia, Elbert, Lincoln, McDuffie, Wilks, GA
Fishing Creek	Chester, Lancaster
Greenwood	Greenwood, Laurens, Newberry
Hartwell	Anderson, Oconee, Pickens, SC; Franklin, Hart, Stephens, GA
Keowee	Oconee, Pickens
Marion	Berkeley, Calhoun, Claredon, Orangeburg, Sumter
Moultrie	Berkeley
Murray	Lexington, Newberry, Richland, Saluda
Robinson	Chesterfield, Darlington
Saluda	Greenville, Pickens
Secession	Abbeville, Anderson
Wateree	Fairfield, Kershaw, Lancaster
William C. Bowen	Spartanburg
Wylie	York, SC; Gaston, Mecklenburg, NC


Anderson
Reservoir
Williamston
Creek
Creek
Creek
Rocky
Little
Rocky
Creek
East Rocky Creek
Creek
Creek
Creek
Belton
ANDERSON
Rocky River
Creek
Creek
Creek
Creek
Creek
Creek
Creek
Creek
Broadway
Lake
Rocky
Beaver
Creek
Creek
Creek
Creek
Creek
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LAKE SECESSION

STORET NO. 4514

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate Lake Secession is eutrophic. It ranked eleventh in overall trophic quality when the 13 South Carolina lakes sampled in 1973 were compared using a combination of six parameters*. Nine of the lakes had less median total phosphorus, three had less and two had the same median dissolved phosphorus, eight had less median inorganic nitrogen, all of the other lakes had less mean chlorophyll a, and six had greater mean Secchi disc transparency.

Except for turbidity, Survey limnologists did not note any nuisance conditions during the sampling year; but oxygen depression or depletion occurred at station 1 at all sampling times, and depression occurred at station 2 in June and September.

B. Rate-Limiting Nutrient:

The algal assay results indicate phosphorus limitation at the time the assay sample was taken (06/26/73). The lake data indicate phosphorus limitation at all sampling times.

C. Nutrient Controllability:

1. Point sources--The phosphorus loads from point sources amounted to 74.7% of the total reaching the lake during the sampling year. The Anderson wastewater treatment plant contributed

* See Appendix A.

68.0% of the total, and the Belton plant contributed 6.7%.

During the sampling year, Lake Secession received a total phosphorus loading about five times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic loading (see page 12). However, the hydraulic retention time of the lake is not known, and it is possible that Vollenweider's model does not apply. Nonetheless, the existing trophic condition of the lake is evidence of excessive nutrient loads.

While even complete removal of phosphorus at the Anderson and Belton wastewater treatment plants would still leave a phosphorus loading of 1.81 $g/m^2/yr$, in view of the questionable applicability of Vollenweider's model and the phosphorus-limited condition of the lake, it is likely that a high degree of phosphorus control at the two point sources would result in a significant improvement in the trophic condition of the lake.

2. Non-point sources--Except for Hencoop Creek, the phosphorus export rates of the Lake Secession tributaries were quite low (page 11) and compare well with the export rates of South Carolina tributaries elsewhere; e.g., the mean of the rates of Lake Keowee* tributaries was 17 $kg/km^2/yr$ (range of 15 to 19 $kg/km^2/yr$).

The cause of the higher rate of Hencoop Creek is not known but may have been the result of urban drainage from Belton (see map, page v).

* Working Paper No. 433.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 3.56 kilometers^2.
2. Mean depth: Unknown.
3. Maximum depth: 55 meters.
4. Volume: Unknown.
5. Mean hydraulic retention time: Unknown.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Rocky River	328.9	4.19
Hencoop Creek	72.8	0.94
Bear Creek	22.9	0.29
First Creek	11.0	0.14
Governor's Creek	10.5	0.13
Minor tributaries & immediate drainage -	53.8	0.55
Totals	496.3	6.24

2. Outlet -

Rocky River	499.9**	6.24

C. Precipitation***:

1. Year of sampling: 149.9 centimeters.
2. Mean annual: 119.9 centimeters.

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† Table of metric conversions--Appendix B.
†† King, 1974.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Lake Secession was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a number of depths at three stations on the lake (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 19.2 meters at station 1, 11.6 meters at station 2, and 4.0 meters at station 3.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR LAKE SECESSION
STORET CODE 4514

PARAMETER	1ST SAMPLING (6/26/73) 3 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (9/18/73) 3 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (11/14/73) 3 SITES RANGE	MEAN	MEDIAN
TEMP (C)	9.0 - 30.2	23.8	23.5	23.3 - 26.2	24.3	23.9	10.2 - 15.3	13.7	15.0
DISS OXY (MG/L)	0.2 - 9.9	4.0	2.8	0.6 - 5.0	3.0	3.3	0.0 - 10.8	7.4	8.0
CNDCTVY (MCROMO)	50. - 103.	60.	57.	38. - 54.	45.	43.	42. - 158.	53.	43.
PH (STAND UNITS)	6.2 - 9.1	7.3	6.7	6.6 - 7.0	6.8	6.8	6.4 - 7.2	6.6	6.6
TOT ALK (MG/L)	13. - 26.	17.	16.	10. - 15.	11.	10.	18. - 49.	23.	20.
TOT P (MG/L)	0.022 - 0.120	0.049	0.040	0.033 - 0.133	0.085	0.083	0.021 - 0.124	0.054	0.035
ORTHO P (MG/L)	0.003 - 0.016	0.005	0.005	0.012 - 0.030	0.021	0.020	0.003 - 0.026	0.008	0.006
NO2+NO3 (MG/L)	0.040 - 0.510	0.164	0.085	0.080 - 0.260	0.212	0.240	0.050 - 0.410	0.150	0.110
AMMONIA (MG/L)	0.050 - 1.670	0.308	0.125	0.060 - 0.210	0.131	0.140	0.040 - 4.650	0.519	0.120
KJEL N (MG/L)	0.300 - 2.300	0.736	0.600	0.600 - 0.900	0.754	0.700	0.400 - 6.300	1.055	0.500
INORG N (MG/L)	0.100 - 1.750	0.471	0.395	0.140 - 0.410	0.343	0.380	0.170 - 4.700	0.669	0.250
TOTAL N (MG/L)	0.360 - 2.380	0.899	0.735	0.850 - 1.140	0.966	0.960	0.590 - 6.350	1.205	0.710
CHLRPYL A (UG/L)	9.8 - 41.7	21.2	12.2	1.8 - 2.0	1.9	1.8	5.4 - 12.7	9.1	9.1
SECCHI (METERS)	0.8 - 1.5	1.2	1.4	0.4 - 0.8	0.5	0.4	0.9 - 1.4	1.1	1.0

B. Biological Characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
06/26/73	1. *Melosira sp.*	621
	2. *Cryptomonas sp.*	375
	3. *Synedra sp.*	273
	4. Flagellates	228
	5. *Microcystis sp.*	205
	Other genera	683
	Total	2,385
09/18/73	1. *Anabaena sp.*	147
	2. *Synedra sp.*	48
	3. *Anabaenopsis sp.*	48
	4. *Cyclotella sp.*	25
	5. *Raphidiopsis sp.*	25
	Other genera	74
	Total	367
11/14/73	1. *Ankistrodesmus sp.*	1,145
	2. Flagellates	1,009
	3. *Scenedesmus sp.*	627
	4. *Nephrocytium sp.*	300
	5. *Synedra sp.*	300
	Other genera	1,854
	Total	5,235

2. Chlorophyll *a* -

Sampling Date	Station Number	Chlorophyll *a* (µg/l)
06/26/73	1	41.7
	2	12.2
	3	9.8
09/18/73	1	1.8
	2	1.8
	3	2.0
11/14/73	1	5.4
	2	9.1
	3	12.7

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.009	0.670	0.2
0.010 P	0.019	0.670	5.7
0.020 P	0.029	0.670	8.8
0.050 P	0.059	0.670	8.7
0.025 P + 0.5 N	0.034	1.170	16.8
0.050 P + 1.0 N	0.059	1.670	16.0
1.0 N	0.009	1.670	0.2

2. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that the potential primary productivity of Lake Secession was relatively low at the time the sample was collected (06/26/73). The increase in yield with the addition of phosphorus and the lack of increase in yield when only nitrogen was added indicate phosphorus limitation.

The lake data also indicate phosphorus limitation (i.e., the mean inorganic nitrogen/orthophosphorus ratios were greater than 16/1 at all sampling times, and phosphorus limitation would be expected).

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the South Carolina National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff month of January when two samples were collected. Sampling was begun in February, 1973, and was completed in February, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the South Carolina District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus point-source loads, if any.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the means of the nutrient loads at stations C-1, D-1, and E-1, in kg/km^2/year, and multiplying the means by the ZZ area in km^2.

The operators of the Anderson and Belton wastewater treatment plants provided monthly effluent samples and corresponding flow data.

* See Working Paper No. 175.

A. Waste Sources:

1. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Anderson*	20,000	tr. filter	7,426.2	Rocky River
Belton**	1,200	aer. pond***	753.2	Cupboard Creek

2. Known industrial - None

* Prater, 1973.
** Burriss, 1973.
*** Served by Imhoff tank until November 8, 1974 (Burriss, 1974).

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Rocky River	2,855	11.2
Hencoop Creek	2,465	9.7
Bear Creek	285	1.1
First Creek	105	0.4
Governor's Creek	95	0.4
b. Minor tributaries & immediate drainage (non-point load) -	555	2.2
c. Known municipal STP's -		
Anderson	17,340	68.0
Belton	1,710	6.7
d. Septic tanks* -	25	0,1
e. Known industrial - None	-	-
f. Direct precipitation** -	60	0.2
Total	25,495	100.0

2. Outputs -

Lake outlet - Rocky River 11,995

3. Net annual P accumulation - 13,500 kg.

* Estimate based on 80 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/yr	% of total
a. Tributaries (non-point load) -		
Rocky River	113,325	50.5
Hencoop Creek	26,185	11.7
Bear Creek	6,095	2.7
First Creek	4,740	2.1
Governor's Creek	4,535	2.0
b. Minor tributaries & immediate drainage (non-point load) -	20,245	9.0
c. Known municipal STP's -		
Anderson	39,535	17.6
Belton	4,915	2.2
d. Septic tanks* -	855	0.4
e. Known industrial - None	-	-
f. Direct precipitation** -	3,845	1.8
Total	224,275	100.0

2. Outputs -

Lake outlet - Rocky River 188,600

3. Net annual N accumulation - 35,675 kg.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
Rocky River	9	345
Hencoop Creek	34	360
Bear Creek	12	266
First Creek	10	431
Governor's Creek	9	432

* Estimate based on 80 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m^2/yr	7.16	3.79	63.0	10.0

Vollenweider phosphorus loadings ($g/m^2/yr$) based on area and mean outflow of Lake Secession:	
"Dangerous" (eutrophic loading)	1.40
"Permissible" (oligotrophic loading)	0.70

V. LITERATURE REVIEWED

Burriss, Bobby, 1973. Survey questionnaire (Belton STP). Belton

_____, 1974. Personal communication (change in Belton treatment facilities). Belton.

King, Robert W., Jr., 1974. Personal communication (lake morphometry). SC Dept. of Health & Env. Control, Columbia.

Prater, William R., 1973. Survey questionnaire (Anderson STP). Anderson.

Vollenweider, R. A., and P. J. Dillon, 1974. The application of the phosphorus loading concept to eutrophication research. Natl. Res. Council of Canada Publ. No. 13690, Canada Centre for Inland Waters, Burlington, Ontario.

VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
4503	FISHING CREEK RESERVOIR	0.143	0.535	483.000	2.811	10.200	0.051
4504	LAKE GREENWOOD	0.061	0.470	463.917	8.150	15.000	0.011
4505	LAKE HARTWELL	0.013	0.130	422.000	6.157	15.000	0.004
4506	LAKE MARION	0.055	0.280	470.176	8.728	14.900	0.010
4507	LAKE MURRAY	0.024	0.260	424.905	6.478	15.000	0.007
4508	LAKE ROBINSON	0.014	0.260	458.778	8.611	14.000	0.005
4510	LAKE WATEREE	0.094	0.450	475.667	8.408	14.100	0.034
4511	LAKE WYLIE	0.045	0.380	462.222	5.422	14.800	0.013
4512	LAKE MOULTRIE	0.026	0.200	455.36	8.800	11.200	0.006
4513	LAKE KEOWEE	0.008	0.170	371.750	2.433	15.000	0.003
4514	LAKE SECESSION	0.057	0.355	462.778	10.722	15.000	0.006
4515	SALUDA LAKE	0.046	0.230	476.833	1.517	10.800	0.006
4516	LAKE WILLIAM C. BOWEN	0.022	0.360	459.889	3.911	15.000	0.007

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
4503	FISHING CREEK RESERVOIR	0 (0)	0 (0)	0 (0)	92 (11)	100 (12)	0 (0)	192
4504	LAKE GREENWOOD	17 (2)	8 (1)	33 (4)	42 (5)	21 (0)	25 (3)	146
4505	LAKE HARTWELL	92 (11)	100 (12)	92 (11)	58 (7)	21 (0)	92 (11)	455
4506	LAKE MARION	33 (4)	50 (6)	25 (3)	17 (2)	50 (6)	33 (4)	208
4507	LAKE MURRAY	67 (8)	62 (7)	83 (10)	50 (6)	21 (0)	46 (5)	329
4508	LAKE ROBINSON	83 (10)	62 (7)	67 (8)	25 (3)	75 (9)	83 (10)	395
4510	LAKE WATEREE	8 (1)	17 (2)	17 (2)	33 (4)	67 (8)	8 (1)	150
4511	LAKE WYLIE	50 (6)	25 (3)	50 (6)	67 (8)	58 (7)	17 (2)	267
4512	LAKE MOULTRIE	58 (7)	83 (10)	75 (9)	8 (1)	83 (10)	71 (8)	378
4513	LAKE KEOWEE	100 (12)	92 (11)	100 (12)	83 (10)	21 (0)	100 (12)	496
4514	LAKE SECESSION	25 (3)	42 (5)	42 (5)	0 (0)	21 (0)	58 (7)	188
4515	SALUDA LAKE	42 (5)	75 (9)	8 (1)	100 (12)	92 (11)	71 (8)	388
4516	LAKE WILLIAM C. BOWEN	75 (9)	33 (4)	58 (7)	75 (9)	21 (0)	46 (5)	308

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	4513	LAKE KEOWEE	496
2	4505	LAKE HARTWELL	455
3	4508	LAKE ROBINSON	395
4	4515	SALUDA LAKE	388
5	4512	LAKE MOULTRIE	378
6	4507	LAKE MURRAY	329
7	4516	LAKE WILLIAM C. BOWEN	308
8	4511	LAKE WYLIE	267
9	4506	LAKE MARION	208
10	4503	FISHING CREEK RESERVOIR	192
11	4514	LAKE SECESSION	188
12	4510	LAKE MATEREE	150
13	4504	LAKE GREENWOOD	146

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4514 SECESSION LAKE

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 499.9

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
4514A1	328.9	5.92	7.33	9.26	6.03	3.54	2.41	3.26	1.87	1.76	1.95	3.14	3.99	4.19
4514A2	499.9	7.42	9.43	12.74	9.48	6.06	4.56	4.30	3.48	3.96	3.91	4.19	5.66	6.24
4514H1	72.8	1.33	1.64	2.07	1.36	0.79	0.54	0.74	0.42	0.40	0.42	0.71	0.91	0.94
4514C1	22.9	0.40	0.51	0.62	0.42	0.25	0.17	0.23	0.14	0.11	0.14	0.23	0.28	0.29
4514D1	11.0	0.198	0.227	0.311	0.198	0.113	0.085	0.113	0.057	0.057	0.057	0.113	0.142	0.139
4514E1	10.5	0.198	0.227	0.283	0.198	0.113	0.085	0.113	0.057	0.057	0.057	0.085	0.113	0.132
4514Z2	53.8	0.79	0.91	1.13	0.85	0.51	0.40	0.34	0.25	0.23	0.25	0.40	0.57	0.55

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 499.9
SUM OF SUB-DRAINAGE AREAS = 499.9

TOTAL FLOW IN = 75.18
TOTAL FLOW OUT = 75.04

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4514A1	2	73	9.345	24	5.097				
	3	73	11.610	24	7.079				
	4	73	11.468	15	6.513				
	5	73	7.929	19	4.757				
	6	73	10.477	17	7.221				
	7	73	3.398	15	4.814				
	8	73	3.115	11	1.982				
	9	73	5.097	16	28.317				
	10	73	2.350	14	1.416				
	11	73	2.152	11	1.472				
	12	73	6.145	9	3.540				
	1	74	9.741	12	5.097	26	7.221		
	2	74	9.911	9	11.893				
4514A2	2	73	11.610	24	7.929				
	3	73	10.689	24	7.646				
	4	73	17.981	15	7.079				
	5	73	13.734	19	6.513				
	6	73	16.424	17	12.176				
	7	73	5.380	15	6.513				
	8	73	5.097	11	5.947				
	9	73	7.362	16	33.980				
	10	73	3.823	14	2.265				
	11	73	3.964	11	2.407				
	12	73	8.495	9	4.955				
	1	74	16.141	12	7.362	26	11.327		
	2	74	15.291	9	18.406				

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4514 SECESSION LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4514B1	2	73	2.124	24	1.133				
	3	73	2.549	24	1.416				
	4	73	2.690	15	1.444				
	5	73	1.841	19	1.048				
	6	73	2.407	17	1.586				
	7	73	0.850	15	1.076				
	8	73	0.708	11	0.425				
	9	73	1.133	16	2.549				
	10	73	0.510	14	0.283				
	11	73	0.481	11	0.311				
	12	73	1.359	9	0.708				
	1	74	2.152	12	0.991	26	1.586		
	2	74	2.124	9	2.633				
4514C1	2	73	0.708	24	0.340				
	3	73	0.793	24	0.425				
	4	73	0.850	15	0.453				
	5	73	0.566	19	0.340				
	6	73	0.850	17	0.481				
	7	73	0.227	15	0.311				
	8	73	0.198	11	0.113				
	9	73	0.340	16	0.793				
	10	73	0.170	14	0.142				
	11	73	0.142	11	0.142				
	12	73	0.425	9	0.255				
	1	74	0.680	12	0.396	26	0.510		
	2	74	0.623	9	0.821				
4514D1	2	73	0.340	24	0.170				
	3	73	0.396	24	0.227				
	4	73	0.425	15	0.227				
	5	73	0.283	19	0.170				
	6	73	0.368	17	0.227				
	7	73	0.113	15	0.142				
	8	73	0.085	11	0.057				
	9	73	0.170	16	0.396				
	10	73	0.085	14	0.057				
	11	73	0.085	11	0.057				
	12	73	0.198	9	0.113				
	1	74	0.311	12	0.170	26	0.227		
	2	74	0.283	9	0.396				
4514E1	2	73	0.340	24	0.142				
	3	73	0.368	24	0.198				
	4	73	0.396	15	0.198				
	5	73	0.255	19	0.142				
	6	73	0.340	17	0.198				
	7	73	0.113	15	0.142				
	8	73	0.085	11	0.057				
	9	73	0.170	16	0.368				
	10	73	0.085	14	0.057				
	11	73	0.057	11	0.057				
	12	73	0.198	9	0.113				
	1	74	0.311	12	0.170	26	0.227		
	2	74	0.283	9	0.368				

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4514 SECESSION LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4514ZZ	2	73	1.359	24	0.736				
	3	73	1.671	24	0.991				
	4	73	1.699	15	0.934				
	5	73	1.133	19	0.680				
	6	73	1.557	17	1.019				
	7	73	0.566	15	0.680				
	8	73	0.425	11	0.283				
	9	73	0.850	16	1.699				
	10	73	0.340	14	0.283				
	11	73	0.311	11	0.311				
	12	73	0.878	9	0.510				
	1	74	1.416	12	0.793	26	1.048		
	2	74	1.557	9	1.727				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/04/27

451401
35 15 35.0 082 36 30.0 3
LAKE SECESSION
45007 SOUTH CAROLINA
040391

11EPALES 2111202
0067 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/26	15 35	0000	30.2		60	50K	8.60	14	0.060	0.500	0.040	0.003
	15 35	0006	29.4	8.8		50K	8.10	16	0.090	0.300	0.060	0.003
	15 35	0015	23.3	2.8		55	6.40	18	0.060	0.300	0.260	0.003
	15 35	0030	20.7	2.1		50K	6.30	14	0.170	0.400	0.300	0.004
	15 35	0046	17.9	0.2		65	6.50	17	0.680	1.200	0.090	0.005
	15 35	0063	9.0	0.7		103	6.80	26	1.670	2.300	0.080	0.003
73/09/18	10 20	0000	26.1		30	54	6.90	15	0.060	0.900	0.080	0.012
	10 20	0005	25.0	0.6		50	7.00	11	0.210	0.700	0.180	0.020
	10 20	0015	24.2	1.6		41	7.00	10K	0.160	0.700	0.220	0.018
	10 20	0030	23.8	2.6		38	6.90	10K	0.170	0.800	0.220	0.020
	10 20	0045	23.6	2.4		41	6.80	10K	0.180	0.800	0.230	0.022
73/11/14	10 35	0000	15.3		54	42	6.40	21	0.140	0.600	0.120	0.006
	10 35	0005	15.3	7.0		42	6.40	20	0.140	0.500	0.110	0.004
	10 35	0015	15.2	6.6		42	6.40	20	0.140	0.500	0.110	0.004
	10 35	0030	15.2	6.4		44	6.40	20	0.160	0.500	0.110	0.003
	10 35	0055	11.5	0.0		158	6.60	49	4.650	6.300	0.050	0.004

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/26	15 35	0000	0.024	41.7
	15 35	0006	0.022	
	15 35	0015	0.036	
	15 35	0030	0.053	
	15 35	0046	0.067	
	15 35	0063	0.069	
73/09/18	10 20	0000	0.033	1.8
	10 20	0005	0.053	
	10 20	0015	0.094	
	10 20	0030	0.072	
	10 20	0045	0.133	
73/11/14	10 35	0000	0.022	5.4
	10 35	0005	0.021	
	10 35	0015	0.021	
	10 35	0030	0.023	
	10 35	0055	0.061	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

451402
35 17 05.0 082 35 30.0 3
LAKE SECESSION
45007 SOUTH CAROLINA
040391

11EPALES 2111202
0042 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/26	16 15	0000	29.9		54	53	9.10	16	0.080	0.600	0.060	0.004
	16 15	0006	29.4	9.9		50K	8.70	13	0.050	0.500	0.050	0.005
	16 15	0015	23.4	2.8		60	6.40	13	0.190	0.600	0.300	0.006
	16 15	0027	20.9	1.9		51	6.20	13	0.220	0.500	0.310	0.005
	16 15	0038	19.9	0.6		72	6.50	22	0.730	1.200	0.060	0.005
73/09/18	10 50	0000	26.2		16	48	6.80	14	0.070	0.800	0.080	0.016
	10 50	0005	24.4	3.4		41	6.80	10K	0.140	0.700	0.240	0.024
	10 50	0015	23.9	3.4		42	6.70	10K	0.130	0.700	0.260	0.020
	10 50	0025	23.9	3.2		43	6.60	10K	0.140	0.600	0.250	0.022
	10 50	0035	23.7	3.4		43	6.60	10K	0.150	0.700	0.260	0.020
73/11/14	10 15	0000	15.1		40	42	6.60	22	0.090	0.600	0.110	0.008
	10 15	0005	15.1	8.0		42	6.60	18	0.080	0.500	0.090	0.004
	10 15	0015	14.9	8.6		42	6.60	20	0.070	0.500	0.100	0.007
	10 15	0033	12.5	9.4		45	6.70	22	0.120	0.500	0.250	0.009

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/26	16 15	0000	0.030	12.2
	16 15	0006	0.032	
	16 15	0015	0.044	
	16 15	0027	0.044	
	16 15	0038	0.095	
73/09/18	10 50	0000	0.067	1.8
	10 50	0005	0.090	
	10 50	0015	0.083	
	10 50	0025	0.109	
	10 50	0035	0.113	
73/11/14	10 15	0000	0.035	9.1
	10 15	0005	0.034	
	10 15	0015	0.045	
	10 15	0033	0.124	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

451403
35 19 30.0 082 34 10.0 3
LAKE SECESSION
45007 SOUTH CAROLINA
040391

11EPALES 2111202
0017 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/06/26	16 45	0000	28.7		30	58	8.90	14	0.070	0.700	0.060	0.006
	16 45	0006	27.0	8.5		58	7.40	21	0.080	0.600	0.110	0.005
	16 45	0013	23.6	5.4		58	6.70	18	0.160	0.600	0.510	0.016
73/09/18	11 15	0000	24.7		14	43	6.60	10	0.080	0.900	0.240	0.030
	11 15	0005	23.4	4.4		48	6.60	11	0.100	0.800	0.240	0.029
	11 15	0010	23.3	5.0		50	6.60	11	0.110	0.700	0.260	0.022
73/11/14	10 05	0000	11.8		37	45	7.20	20	0.040	0.700	0.190	0.009
	10 05	0001	11.8	10.8		45						
	10 05	0007	10.2	10.2		46	6.80	22	0.080	0.400	0.410	0.026

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/06/26	16 45	0000	0.032	9.8
	16 45	0006	0.024	
	16 45	0013	0.120	
73/09/18	11 15	0000	0.095	2.0
	11 15	0005	0.079	
	11 15	0010	0.081	
73/11/14	10 05	0000	0.104	12.7
	10 05	0007	0.105	

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/04/27

4514A1
34 21 30.0 082 34 30.0 4
ROCKY RIVER
45 7.5 ANTREVILLE
I/SECESSION LAKE 031391
ST HWY 413 BRDG 2 MI NE CARSWELL CHURCH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L-P
73/02/24	09 45		0.580	0.420	0.160	0.084	0.140
73/03/24	09 40		0.500	0.710	0.105	0.068	0.170
73/04/15	10 35		0.390	0.680	0.074	0.050	0.120
73/05/19	10 04		0.700	0.930	0.092	0.115	0.175
73/06/17	10 15		0.410	0.630	0.058	0.076	0.160
73/07/15	10 04		0.630	0.540	0.046	0.105	0.250
73/08/11	11 20		0.910			0.170	0.315
73/09/16	11 22		0.180	0.900	0.050	0.042	0.150
73/10/14	10 35		0.600	2.100	0.115	0.120	0.195
73/11/11	14 50		0.490	1.150	0.104	0.112	0.180
73/12/09	09 55		0.490	0.300	0.120	0.076	0.150
74/01/12	15 15		0.504	0.400	0.080	0.064	0.135
74/01/26	10 45		0.490	0.300	0.064	0.044	0.120
74/02/09	11 03		0.420	0.300	0.050	0.035	0.095

STORET RETRIEVAL DATE 76/04/27

4514A2
34 15 30.0 082 36 30.0 4
ROCKY RIVER
45 7.5 ANTREVILLE
O/SECESSION LAKE 031391
BANK JUST BELO POWER PLANT AT DAM
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	09	30	0.370	0.880	0.088	0.028	0.060
73/03/24	09	23	0.350	0.520	0.110	0.046	0.090
73/04/15	14	25	0.320	0.560	0.115	0.042	0.085
73/05/19	09	46	0.330	1.320	0.115	0.022	0.045
73/06/17	09	40	0.230	0.860	0.154	0.044	0.065
73/07/15	09	30	0.075	0.540	0.215	0.018	0.050
73/08/11	11	40	0.024	0.600	0.256	0.005K	0.040
73/09/16	11	45	0.160	1.760	0.176	0.028	0.145
73/10/14	10	30	0.099	0.750	0.220	0.009	0.040
73/11/11	14	02	0.112	1.100	0.144	0.012	0.020
73/12/09	09	35	0.116	0.300	0.068	0.005K	0.025
74/01/12	15	00	0.310	0.400	0.084	0.028	0.080
74/01/26	09	58	0.400	0.500	0.104	0.024	0.075
74/02/09	10	45	0.390	0.300	0.055	0.020	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

451481
34 23 00.0 080 33 30.0 4
HENCOOP CREEK
45 7.5 SAYLORS XROA
T/SECESSION LAKE 030892
BRDG ON RD .5 E OF HWYS 244&413 INTESEC
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	08 30		0.460	0.260	0.044	0.020	0.045
73/03/24	08 35		0.390	0.210	0.030	0.024	0.055
73/04/15	09 35		0.390	1.260	0.054	0.021	0.055
73/05/19	09 01		0.530	0.140	0.020	0.030	0.050
73/06/17	09 00		0.300	0.850	0.038	0.063	0.210
73/07/15	08 50		0.480	1.980	0.069	0.031	0.135
73/08/11	10 15		0.550	0.580	0.066	0.048	0.155
73/09/16	11 15		0.252	0.580	0.048	0.035	0.135
73/10/14	11 55		0.390	0.350	0.032	0.034	0.065
73/11/11	13 20		0.264	0.100K	0.012	0.032	0.032
73/12/09	08 50		0.330	0.100K	0.020	0.020	0.040
74/01/12	14 20		0.352	0.200	0.024	0.014	0.050
74/01/26	09 25		0.368	0.300	0.024	0.020	0.070
74/02/09	10 07		0.330	0.200	0.035	0.025	0.085

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4514C1
34 21 00.0 082 33 30.0 4
BEAR CREEK
45 7.5 ANTREVILLE
T/SECESSION LAKE 031391
BRDG ON RD 1 MI OF LEE SCHOALS CHURCH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	08	40	0.399	0.100K	0.016	0.007	0.015
73/03/24	08	45	0.340	0.140	0.015	0.010	0.025
73/04/15	09	41	0.340	0.400	0.020	0.007	0.020
73/05/19	09	10	0.480	0.175	0.029	0.017	0.020
73/06/17	09	06	0.380	0.367	0.029	0.027	0.045
73/07/15	08	55	0.470		0.060	0.016	0.040
73/08/11	10	05	0.460	0.360	0.027	0.018	0.030
73/09/16	11	08	0.320	0.540	0.046	0.024	0.065
73/10/14	09	55	0.390	1.050	0.046	0.010	0.025
73/11/11	13	26	0.240	0.300	0.016	0.012	0.015
73/12/09	09	00	0.440	0.100	0.012	0.012	0.025
74/01/12	14	27	0.290	0.200	0.016	0.012	0.040
74/01/26	09	30	0.380	0.100	0.016	0.012	0.045
74/02/09	10	15	0.352	0.100	0.020	0.010	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4514D1
34 20 30.0 082 33 00.0 4
FIRST CREEK
45 7.5 ANTREVILLE
T/SECESSION LAKE 031391
BRDG ON ST HWY 28 .25 NW OF FIRST CK CH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	08	50	0.470	0.100K	0.014	0.006	0.010
73/03/24	08	50	0.500	0.205	0.025	0.013	0.030
73/04/15	09	49	0.420	0.720	0.035	0.007	0.020
73/05/19	09	21	0.510	0.160	0.022	0.012	0.020
73/06/17	09	14	0.440	0.190	0.042	0.023	0.035
73/07/15	09	03	0.500	2.200	0.060	0.012	0.035
73/08/11	09	55	0.470	0.150	0.027	0.015	0.020
73/09/16	11	00	0.380	1.980	0.105	0.020	0.055
73/10/14	10	10	0.450	0.800	0.060	0.008	0.020
73/11/11	13	26	0.440	1.800	0.076	0.012	0.015
73/12/09	09	05	0.490	0.200	0.008	0.008	0.020
74/01/12	14	35	0.460	0.200	0.020	0.008	0.025
74/01/26	09	36	0.450	0.100K	0.020	0.012	0.025
74/02/09	10	00	0.460	0.100	0.025	0.010	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4514E1
34 21 30.0 082 35 00.0 4
GOVERNORS CREEK
45 7.5 ANTREVILLE
T/SECESSION LAKE 031391
BRDG ON RT 413 1.5 MI NE OF CARSWELL CH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/24	09 10		0.450	0.210	0.022	0.007	0.015
73/03/24	09 05		0.420	0.150	0.015	0.010	0.020
73/04/15	09 55		0.390	1.470	0.086	0.008	0.020
73/05/19	09 28		0.490	0.270	0.026	0.011	0.015
73/06/17	09 26		0.410	0.230	0.022	0.023	0.030
73/07/15	09 10		0.470	0.690	0.026	0.012	0.030
73/08/11	10 25		0.490	0.690	0.033	0.013	0.020
73/09/16	11 26		0.330	1.680	0.058	0.013	0.050
73/10/14	10 15		0.378	0.550	0.032	0.006	0.020
73/11/11	13 43		0.410	0.450	0.028	0.012	0.012
73/12/09	09 15		0.450	0.100K	0.012	0.012	0.020
74/01/12	11 00		0.390	2.300	0.040	0.012	0.030
74/01/26	09 46		0.440	0.600	0.030	0.012	0.025
74/02/09	10 30		0.450	0.100K	0.022	0.012	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4514AA TF4514AA P020000
34 29 30.0 082 37 25.0 4
ANDERSON
45 7.5 SAYLORS XROS
T/SECESSION LAKE 031391
ROCKY RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/28	00 00								
CP(T)-			1.400	10.500	5.000	2.980	5.500	2.300	2.700
73/06/28	12 00								
73/08/01	18 00								
CP(T)-			1.890	10.500	4.600	5.200	6.100	1.770	1.840
73/08/02	06 00								
73/08/30	08 00								
CP(T)-			1.960	18.900		6.500	7.800	2.650	2.400
73/08/31	08 00								
73/09/28	08 00								
CP(T)-			2.500	10.200	7.000	6.500	7.100	1.800	1.820
73/09/29	08 00								
73/10/30	07 30								
CP(T)-			1.150	10.000	5.600	5.600	6.400	1.700	1.600
73/10/31	07 30								
73/12/06	08 00								
CP(T)-			1.800	9.100	4.150	2.730	4.200	2.100	1.930
73/12/06	20 00								
74/01/04	15 00		2.000	8.600	4.100	3.120	4.300	2.500	1.800
74/01/31	10 00		1.200	11.000	4.600	4.300	6.300	1.800	1.950
74/02/28	10 00		1.680	11.000	5.500	5.250	6.400	2.000	1.900
74/03/29	09 00								
CP(T)-			1.080	13.000	5.400	4.950	6.400	2.000	1.960
74/03/30	09 00								
74/04/30	08 00		1.000	21.000	13.000	7.600	8.600	2.100	2.000
74/05/31	09 00								
CP(T)-			3.200	17.000	5.300	5.467	7.400	1.850	1.800
74/05/31	21 00								
74/06/28	00 00								
CP(T)-			2.800	14.000	4.600	5.900	7.100	1.560	1.800
74/06/28	24 00								

STORET RETRIEVAL DATE 76/04/27

4514XA PD4514XA P002923
34 32 05.0 082 31 03.0 4
BELTON/CUPBOARD CREEK PLANT
45 ANDERSON CO HWY
T/LAKE SECESSION 031392
CUPBOARD CR
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/07	09 00		0.480	0.820	0.560	0.190	0.290	0.220	0.150
73/07/09	11 15		0.040	39.600	26.000	8.350	12.000	0.150	0.150
73/08/15	15 30		0.040	18.000	4.700	2.400	6.000	0.225	0.200
73/09/05	09 50		0.020	41.500				0.210	0.250
73/10/05	10 45		0.080	28.000	15.000	7.000	8.000	0.150	0.210
74/01/10	10 30		0.240	11.300	6.600	5.200	6.550	0.210	0.210
74/02/14	10 30		0.240	8.600	3.360	3.520	4.500	0.180	0.225
74/03/07	09 05		0.160	7.500	2.100	4.000	4.900	0.150	0.220
74/04/10	15 30		0.200	11.000	5.750	5.500	6.100	0.225	0.250
74/05/20	09 30		0.144	16.000	5.150	7.450	8.350	0.210	0.150
74/06/07	11 45		0.120	19.000	7.200	8.300	9.800	0.150	0.175